

## Introduction and Historical Background

**K**eti Bunder was formerly a port city and commercial centre. In 1845 the population was recorded as 2,542 and in 1932 the town was given the status of a municipal committee. However, this status was retracted by the British government due to the migration of the local population, owing to the reduction in freshwater after the construction of the Sukkur Barrage. Construction of the Ghulam Mohammad Barrage in 1962 further reduced the flow of fresh water and a decline in agriculture production. The location of Ketu Bunder has changed thrice during the past 70 years due to sea intrusion.

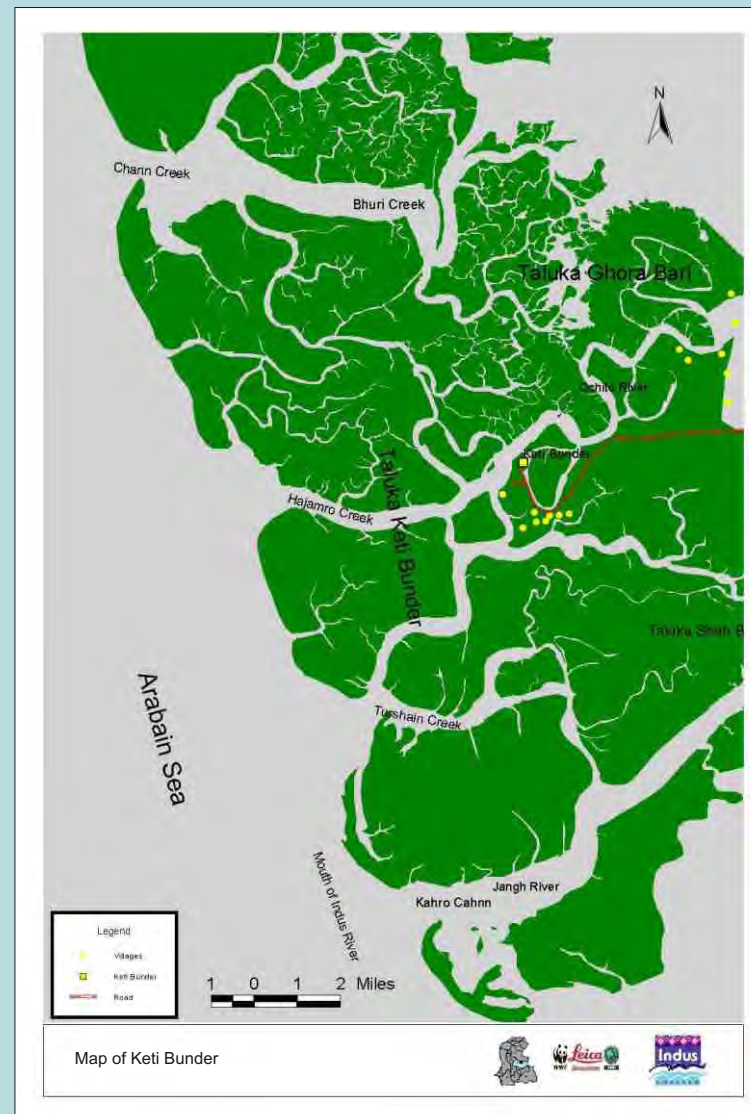
Situated at about 200 km south-east of Karachi, Ketu Bunder Taluka stretches over an area of 60,969 ha. It consists of a total of 42 Dehs (settlements) of which 28 have already been engulfed by the intruding sea. There are four major creeks in the area viz. Chann, Hajamro, Khobar and Kangri. The climate is arid subtropical with temperatures remaining moderate throughout the year. In the town about 40% homes are made of bricks and blocks and 60% percent are thatched huts.

Fishing is the major source of livelihood and about 90% of the local population is engaged in fishing activities. Not all the fishermen own boats and many of them work as labourers on boats. Only 8% of the population is engaged in livestock rearing and 2% serve in various sectors.

Previously, freshwater from the River Indus engulfed this area; therefore, the locals depended largely on agriculture. Red rice was considered to be the main agricultural commodity, and it was exported to the other countries. The area was suitable for growing different kinds of fruits including bananas, coconuts and melons. With the reduction in freshwater flow, the sea has crept in and agricultural lands have either been swept away by the sea or spoilt by water logging and salinity.

Access to education in the area is very low with about 90% of the local population illiterate. The overall literacy ratio in Ketu Bunder town is very low as compared to the district, provincial and national level average literacy ratio. The literacy among the male is 12% while among the female it is as low as 5%. A number of diseases are common in Ketu Bunder including Tuberculosis, Hepatitis and Malaria.

Women contribute significantly in the household chores such as, cooking, washing, cleaning, collecting fuel wood, fetching water, cutting and chopping fodder and rearing the children.



Map of Ketu Bunder

## Ketu Bunder

### Our Mission

WWF - Pakistan aims to conserve nature and ecological processes by:

- Preserving genetic, species and ecosystem diversity
- Ensuring that the use of renewable natural resources is sustainable, both now and in the longer term
- Promoting actions to reduce pollution and the wasteful exploitation and consumption of resources and energy

### Vision of Indus the Ecoregion Programme

"Mankind coexists with nature in complete harmony and biodiversity flourishes in its respective habitat"

### Indus For All Programme, WWF - Pakistan

**Programme Management Unit (PMU)**  
606, 607 Fortune Centre, Block-6 P.E.C.H.S, Shakra-e-Faisal, Karachi.  
Tel: 021-4544791-92, Fax: 021-4544790  
www.foreverindus.org

### Programme Implementation Units (PIU)

**Chotiari Wetlands Complex**  
House # 129/2, Housing Society,  
Near Government Boys High School,  
Nawabshah Road, District Sanghar, Sindh.  
Tel: 0235-542837, Fax: 0235-542791

**Keenjhar Lake**  
House # B/112,  
Hashimabad Society Makli,  
District Thatta, Sindh.  
Tel: 0298-772318, 772319, 610426.

**Ketu Bunder**  
Ketu Bunder Town, P.O. Ketu Bunder  
via P.O. Mirpur Sakro,  
District Thatta, Sindh.  
Tel: 0298-607685, 620291

**Pai Forest**  
House # A-3, M.U.C.E.T Employees  
Co-operative Housing Society,  
District Nawabshah, Sindh.  
Tel: 0244-366364, Fax: 0244-282496



A Representative Site of Indus Delta



**Ketu Bunder**

Indus For All Programme, WWF - Pakistan

# Natural Resources

**Natural Vegetation:** The mangrove forests of Keti Bundar fall in the northern block of Sindh Forest Department's management. They are categorized as "Protected Forests" and the land, water lakes and dhoras in Keti Bundar have been notified as Wildlife Sanctuary.

Due to reduction in fresh water flow in the Indus Delta, the mangroves forests have completely vanished in Kangri, Goro, Turchan creeks. In Hajamro creek mangroves exist in small quantities. Some mangrove trees also exist in Khobber creek situated on Indo-Pak border. The major cause of mangrove reduction is the use of mangroves as firewood and grazing. The scarcity of fresh water has also contributed towards the rapid degeneration of natural resources of the area.

**Agriculture:** Vegetable, betel leaf, sugar cane, wheat and fruits are grown in the inland area. Before the construction of dams and barrages, the fresh water discharge from the Indus River was sufficient to hold back sea currents from the shore and provided sufficient freshwater and fertile soil for agriculture.

## Common Birds of Keti Bunder

Common Name	Scientific Name	Status
Black/Pariah Kite	<i>Milvus migrans</i>	Resident
Black-winged Stilt	<i>Himantopus himantopus</i>	Resident
Brahminy Kite	<i>Haliastur indus</i>	Resident
Cattle Egret	<i>Bubulcus ibis</i>	Resident
Common Red Shank	<i>Tringa totanus</i>	Winter visitor
Indian Pond Heron	<i>Ardeola grayii</i>	Resident
Kentish Plover	<i>Charadrius alexandrinus</i>	Winter visitor
Lesser Sand Plover	<i>Charadrius mongolus</i>	Winter visitor
Little Cormorant	<i>Phalacrocorax niger</i>	Resident
Little Egret	<i>Egretta garzetta</i>	Resident
Little Tern	<i>Sterna albifrons</i>	Resident
Red-wattled Lapwing	<i>Hoplopterus indicus</i>	Resident
Ringed Plover	<i>Charadrius hiaticula</i>	Winter visitor
Western Reef Heron	<i>Egretta gularis</i>	Resident



## Floral diversity

Some 39 plant species belonging to 32 genera and 19 families are present in the area. The major plant families contributing to the formation of vegetation in the area are Chenopodiaceae (17.9%) and Poaceae (12.8%) followed by Amaranthaceae (7.6%), Aizoaceae (7.6%), Tamaricaceae (7.6%), Papilionaceae (5.1%), Boraginaceae (5.1%), Tiliaceae (5.1%) and Zygophyllaceae (5.1%).

## Fisheries

Fish and shrimp species that have decreased in recent years include Goli, Dangri, Phar and Kiddi, Mato, Lour, Pada, Boska, Bora, Batoon, Ghanghra, Kachik, Paplet, Suo, Dangro, and Sueri etc. Some fish species such as the Palla fish have nearly vanished. About 63 fish species and 24 shell species recorded in the Keti Bunder area.

## Wildlife

Keti Bunder North and South is a Wildlife Sanctuary, mainly for the water birds. About 50,000 birds in a migratory season have been recorded from this area in the past. The migratory birds include pelicans, egrets, herons, waders, raptors etc. Among terrestrial mammals, Wild boar, Asiatic jackal, Fishing cat and Indian porcupine are common. In reptiles, cobras, vipers, sea snakes and lizards are widespread.

## Marine Mammals

Bottlenose dolphin (*Tursiops truncatus*), Hump-backed dolphin (*Sousa chinensis*), Common dolphin (*Delphinus delphis*), Spinner dolphin (*Stenella longirostris*), Finless porpoise (*Neophocaena phocaenoides*)

## Birds

A total of 69 species were recorded in the Keti Bunder area during ecological assessment in 2006. Among these the majority were migratory such as White pelican (*Pelecanus onocrotalus*), Marsh sandpiper (*Tringa stagnatilis*), Green shank (*Tringa ochropus*), Red shank (*Tringa totanus*), Curlew (*Numenius arquata*) and Ruff (*Philomachus pugnax*). Apart from the waterbirds some terrestrial species are also found such as Crested lark (*Galerida cristata*), Desert lark (*Ammomanes deserti*), Small green bee-eater (*Merops orientalis*), White-eared bulbul (*Pycnonotus leucogenys*), Red-vented bulbul (*Pycnonotus cafer*) and Common buzzard (*Buteo buteo*).

# Livelihoods and Conservation Issues

## Reduction in Flow of Freshwater from River Indus:

The drastic reduction in the flow of the Indus River in the deltaic region and its consequences in the form of environmental and livelihood impacts began with the construction of mega irrigation infrastructures upstream. Water flow from the Indus River to the Delta started declining back in the 1890s when the Punjab irrigation system was developed. The construction of barrages on the River Indus in 1932, 1955, and 1962 further curtailed the water flow resulting in the massive degradation of land, agriculture, forestry and other natural resources in the deltaic region including in Keti Bunder.

The gradual decrease in fresh water and nutrient-rich alluvium and an increase in hyper-saline water has seriously constrained mangrove growth. This in turn affects the breeding success of fish and shrimp species, which as a result affects the livelihoods of natural resource dependent communities.

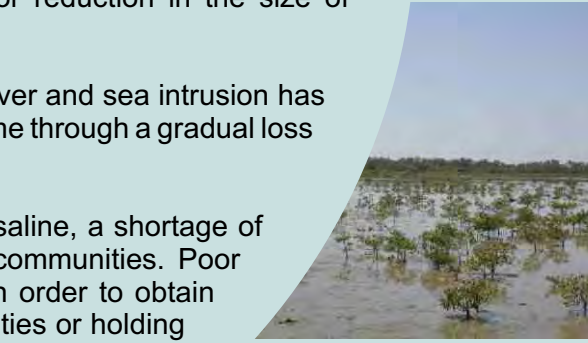
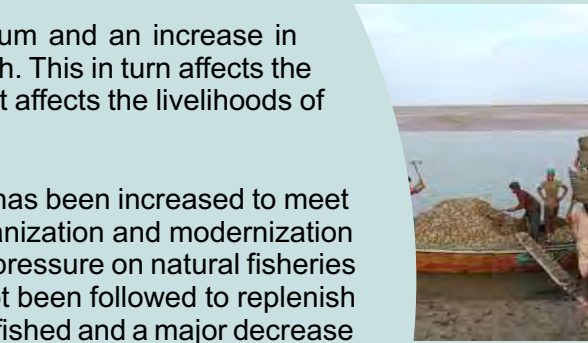
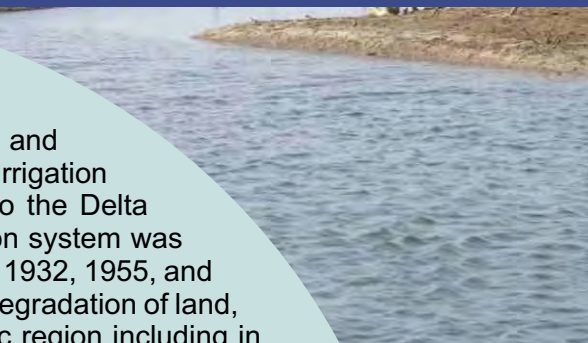
**Overexploitation of Fisheries Resources:** Fish production has been increased to meet growing domestic and export demand through gradual mechanization and modernization of the fishing fleet. This phenomenon has added tremendous pressure on natural fisheries stocks since natural resource management practices have not been followed to replenish the population of fish. Shrimp stocks have been severely over-fished and a major decrease in landings of important shrimp species, as well as a major reduction in the size of commercial species is now noticeable.

**Decline of Livestock:** A reduction in the flow of the Indus River and sea intrusion has resulted in the loss of pasture and subsequently reduced income through a gradual loss of livestock.

**Drinking Water:** Now that aquifers and surface waters are saline, a shortage of drinking water is one of the key problems faced by local communities. Poor communities are compelled to spend beyond their means in order to obtain drinking water for which most do not even have storage facilities or holding tanks.

## Conservation Priorities

The foremost conservation priority is to increase Indus River discharge to the Delta through promotion of efficient water management practices at the upstream. Another key priority is to reduce pressure on mangrove forest cover from grazing and wood cutting. Local communities need to be involved in mangrove plantation on mud flats and conservation of mangrove forests.

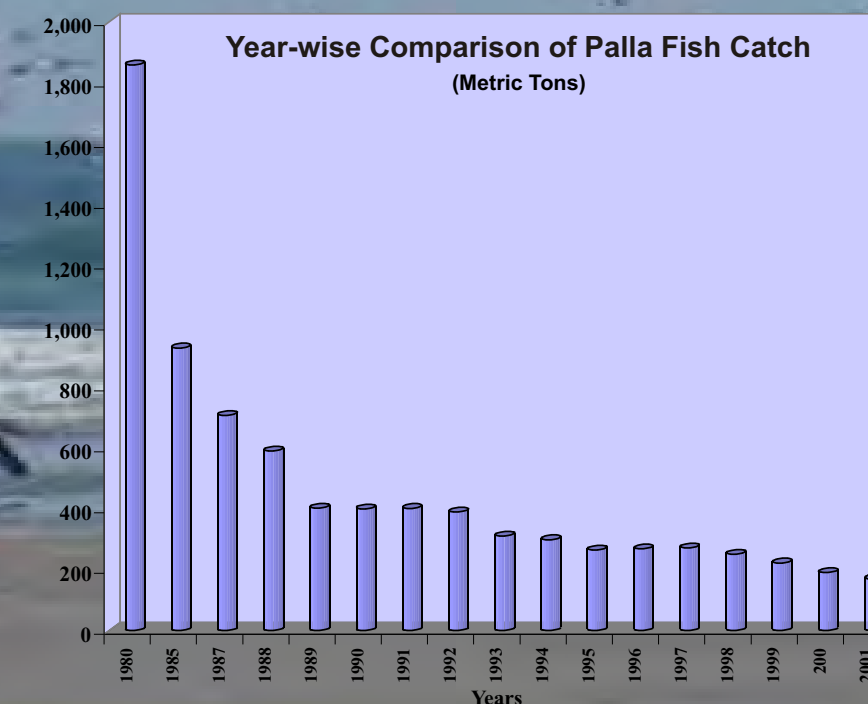


# Status of Palla Fish in Coastal Areas

The famous prized Palla fish (*Tenulosa ilisha*), has migratory habits and for breeding ascends upstream in the river Indus from the Arabian Sea. The fish has been reported to ascend as far as Multan before the construction of barrages on the River Indus but presently it is reported to travel up to Kotri Barrage for breeding, from July to September. Subsequently, the fish fries and the adult return to Arabian Sea and this activity pattern continues year after year.



Due to very low discharge of the Indus and lack of flooding the fish has been unable to migrate upstream for breeding and hence the stocks of Palla fish have depleted at an alarming pace during the last 15 years. It was reported as single large species of fish comprising 70% of the total catch in the past. Presently it hardly constitutes 15% of the total catch. The decline in the catch of this fish can be visualized from the figure below.



(Source: Preliminary Ecological Assessment Report, Indus For All Programme, 2006.)